AMENDMENTS

In the Claims

1. (Currently amended) A combustion chamber for use in a rocket engine, the combustion chamber ~~rocket engine component~~ comprising:

a substantially enclosed, hollow body having a rocket propellant inlet for receiving associated rocket propellant and an exhaust outlet for releasing exhaust, wherein the walls of the body are constructed of at least ~~including~~ first and second structural layers, each comprising at least about 20% of the ~~a body~~ thickness of the walls of the body,

said first structural layer being an interior structural liner layer of the body, having a thickness of at least about 20 mils and being formed of a first material selected from the group consisting of NiAl and NiAl-based alloys, and wherein said first material has a first predetermined ductility and a ~~predetermined~~ thermal conductivity of at least about 40W/m K, and

said second structural layer being formed of a second material selected from the group consisting of Ni-based superalloys, Co-based alloys, Fe-based alloys, Cu, and Cu-based alloys, wherein said second material is more ductile than said first material.

2. Cancelled.

3. Cancelled.

4. (Currently amended) The ~~rocket engine component~~ combustion chamber of claim 1 wherein said first material is a NiAl-based alloy having elemental additions of Zr.

5. (Currently amended) The ~~rocket engine component~~ combustion chamber of claim ~~5A~~ 4 wherein said elemental additions of Zr are at a level of up to approximately 0.3 atomic % of the first material.

6. (Currently amended) The ~~rocket engine component~~ combustion chamber of claim 1 wherein said first material is a NiAl-based alloy being selected to enhance a predetermined

property of the combustion chamber selected from the group consisting of environmental resistance, thermal conductivity and high temperature strength.

7. Cancelled.

8. Cancelled.

9. (Currently amended) A combustion chamber for use in an associated rocket engine, the combustion chamber ~~component for use and exposure within high heat flux and hot gas environments, said component~~ comprising:

a substantially enclosed, hollow body wherein the walls of the body are constructed of at least ~~including~~ first and second structural layers each at least about 20 mils thick and comprising at least about 20% of the thickness of the walls of the ~~a~~ body ~~thickness~~, said first and second structural layers having continuous adjoining surfaces;

said first structural layer having a surface adapted for direct exposure to a heat source or a hot gas, said first structural layer being formed of a first material selected from the group consisting of NiAl and NiAl-based alloys, and wherein said first material is associated with a first predetermined ductility and a ~~predetermined~~ thermal conductivity of at least about 40W/m K, and

said second structural layer being formed of a second material selected from the group consisting of Ni-based superalloys, Co-based superalloys, Fe-based superalloys, Cu, and Cu alloys, said second structural layer being generally shielded from direct exposure to said hot gas by said first structural layer, said second material being associated with a second predetermined ductility, wherein said second material is more ductile than said first material.

10. (Currently amended) The combustion chamber ~~component~~ of claim 9 wherein said first material is associated with a first coefficient of thermal conductivity and said second material is associated with a second coefficient of thermal conductivity and wherein said second coefficient of thermal conductivity is less than said first coefficient of thermal conductivity.

11. (Currently amended) The combustion chamber ~~component~~ of claim 9 wherein said second material is selected in order to enhance a predetermined property of the combustion chamber ~~said component~~, said predetermined property being selected from the group consisting of environmental resistance, strength, thermal conductivity, ductility, and toughness.

12. (Currently amended) The combustion chamber ~~component~~ of claim 11 wherein said predetermined property is environmental resistance.

13. (Currently amended) The combustion chamber ~~component~~ of claim 11 wherein said predetermined property is strength.

14. (Currently amended) The combustion chamber ~~component~~ of claim 11 wherein said predetermined property is thermal conductivity.

15. (Currently amended) The combustion chamber ~~component~~ of claim 11 wherein said predetermined property is toughness.

16. (Currently amended) The combustion chamber ~~component~~ of claim 9 further comprising a third structural layer comprising at least about 20% of said body thickness, said third structural layer formed of a third material selected to enhance a predetermined property of said combustion chamber ~~component~~, said predetermined property being selected from the group consisting of environmental resistance, strength, thermal conductivity, ductility, and toughness.

17. (Currently amended) The combustion chamber ~~component~~ of claim 9 wherein said first material is a NiAl-based alloy having additions of the element Zr.

18. (Currently amended) The combustion chamber ~~component~~ of claim 17 wherein said Zr additions are at a level of up to approximately 0.3 atomic % of the first material.

19. Cancelled.

20. (Currently amended) The combustion chamber ~~component~~ of claim 9 wherein said first material comprises a NiAl-based alloy comprising at least about 95% volume percent of a B2-ordered compound phase.

21. (New) An engine assembly for use in a rocket, the assembly comprising:

a substantially enclosed, hollow combustion chamber having a propellant inlet for receiving propellant and an exhaust outlet for releasing exhaust, wherein the walls of the combustion chamber are constructed of at least first and second structural layers, each comprising at least about 20% of the thickness of the walls of the combustion chamber, the first structural layer being an interior structural liner layer of the combustion chamber, having a thickness of at least about 20 mils and being formed of a first material selected from the group consisting of NiAl and NiAl-based alloys, and wherein the first material has a first predetermined ductility and a thermal conductivity of at least about 40W/m K, and the second structural layer being formed of a second material selected from the group consisting of Ni-based superalloys, Co-based alloys, Fe-based alloys, Cu, and Cu-based alloys, wherein the second material is more ductile than the first material, and,

a nozzle extending from the exhaust outlet of the combustion chamber, wherein the walls of the nozzle are constructed of at least first and second structural layers each comprising at least about 20% of the thickness of the walls of the nozzle, the first structural layer of the nozzle being an interior structural liner layer of the nozzle, having a thickness of at least about 20 mils and being formed of the first material, and wherein the first material has a first predetermined ductility and a thermal conductivity of at least about 40W/m K, and the second structural layer of the nozzle being formed of the second material selected from the group consisting of Ni-based superalloys, Co-based alloys, Fe-based alloys, Cu, and Cu-based alloys, wherein the second material is more ductile than the first material.